

# THORACIC CASE

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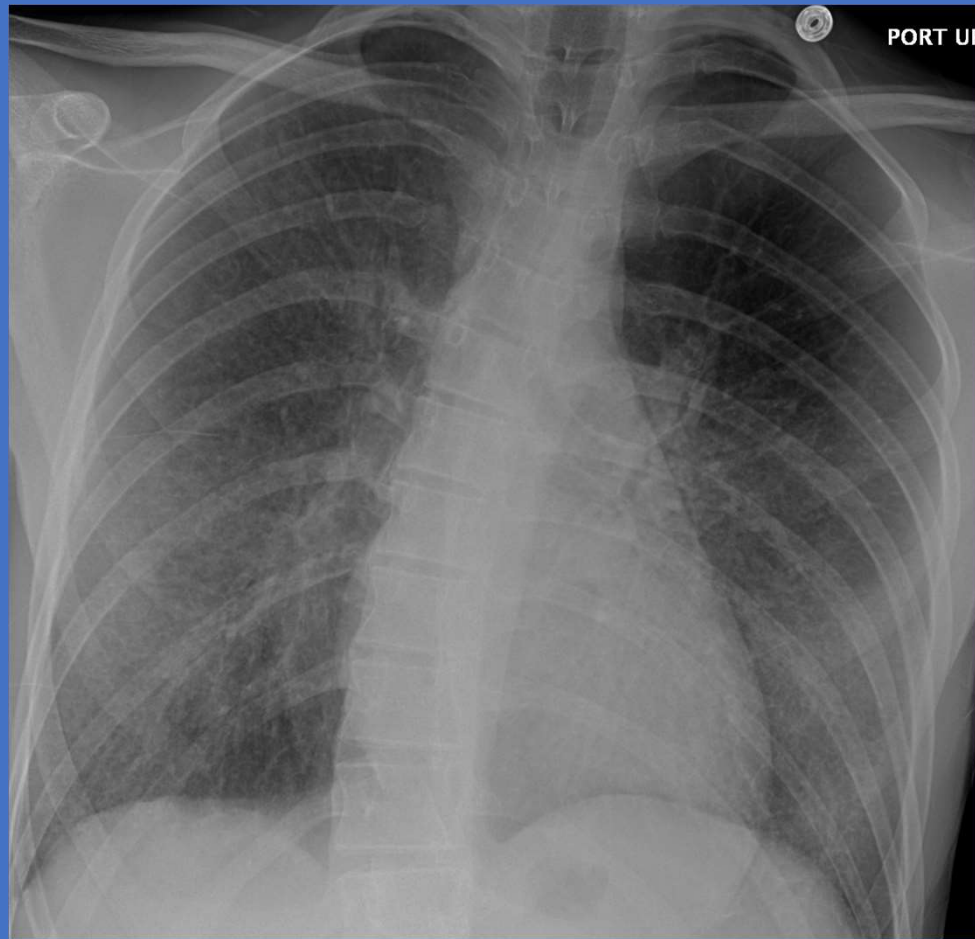
## A 19 y.o. male with no past medical history presents to ED...

- Chief Complaint: Nausea and Vomiting
- HPI:
  - 8 day hx of nausea and vomiting with occasional hemoptysis.
  - **Currently experiencing pleuritic chest pain. Fever with Tmax 102 F at home. Productive cough and SOB.**
  - **Does endorse 13 pound weight loss over past month.**
- PMH
  - **Recently was treated for chlamydia (gonorrhea-) with azithromycin. Completed Course.**
- PSH/PFH non existent or non contributory
- Past Social history
  - **Recently quit vaping 2 months ago** after 2-3 years of use where he routinely inhaled 50-60 puffs/day
  - Exposure to chickens x 2 months while visiting his mother in Atlanta however limited contact. No other exposures to birds.
  - Exposed to fiberglass while he wore a mask while doing construction at his house.
  - His home is under construction with significant exposure to debris and dust
  - No FH or personal hx of lung disease

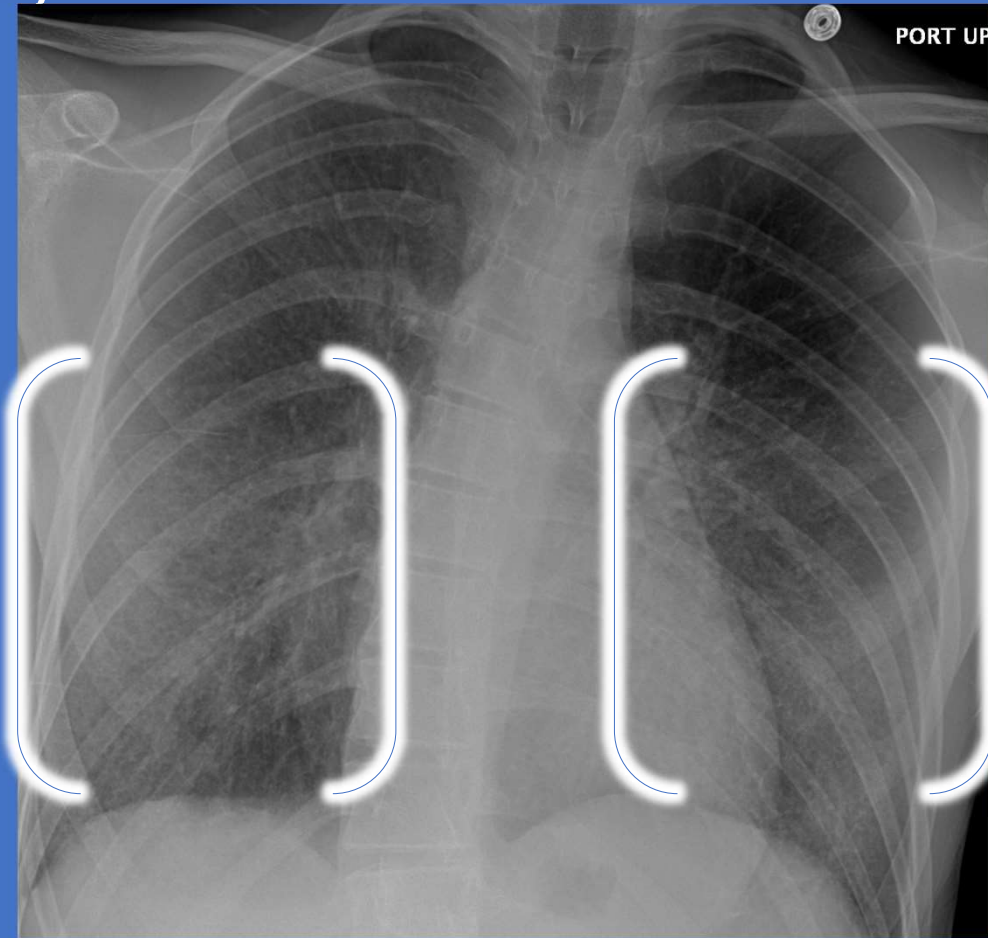
## A 19 y.o. male with no past medical history presents to ED...

- PE:
  - HR = 77 BP = 100/53 Temp = 97.5 F RR = 18 and 95% on RA **BMI = 15.33**
  - General: No acute distress, emaciated
  - **Lungs: Bilateral crackles and decreased breath sounds.**
  - Otherwise non contributory exam
- Labs and other tests:
  - CBC Significant for thrombocytosis, Leukocytosis with neutrophilia and leucopenia.
  - **Elevated D-Dimer.**
  - Negative infectious work up including HIV, RPR, respiratory atypical and viral panels, blastomycoses, histoplasma, legionella, streptococcal.
- Imaging:
  - When he originally presented there was a concern for pneumonia so a CXR was ordered.
  - 5 days later after admission, lack of ambulation, concern for malignancy 2/2 recent weight loss, leukocytosis and elevated D-Dimer prompted a CTPA to be ordered.

What do we see? What kind of Study?

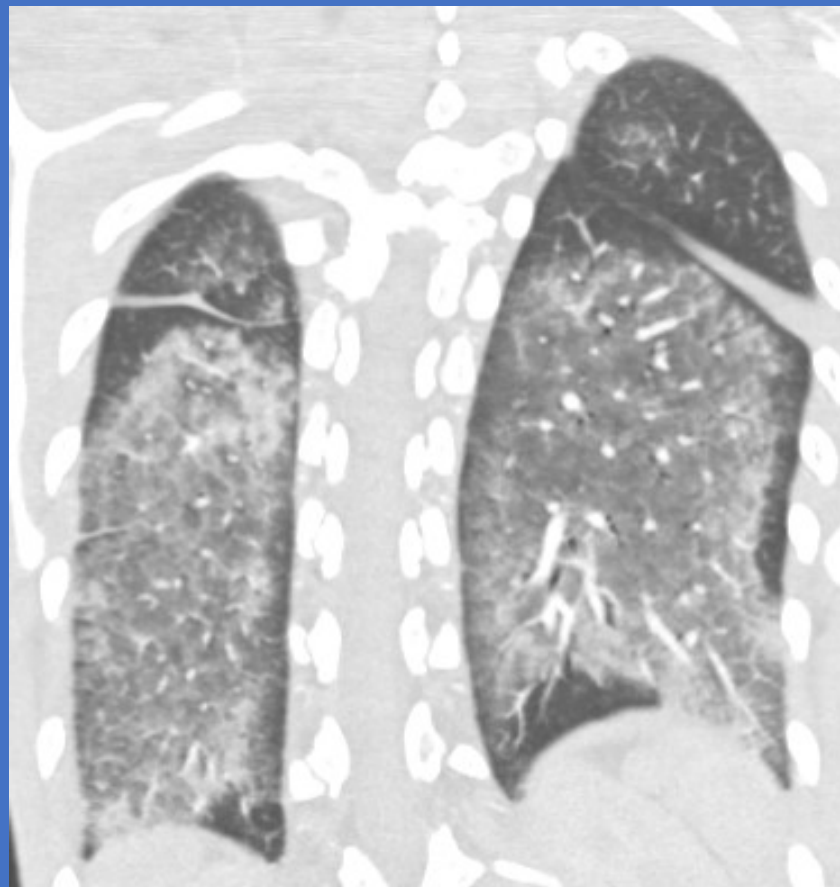
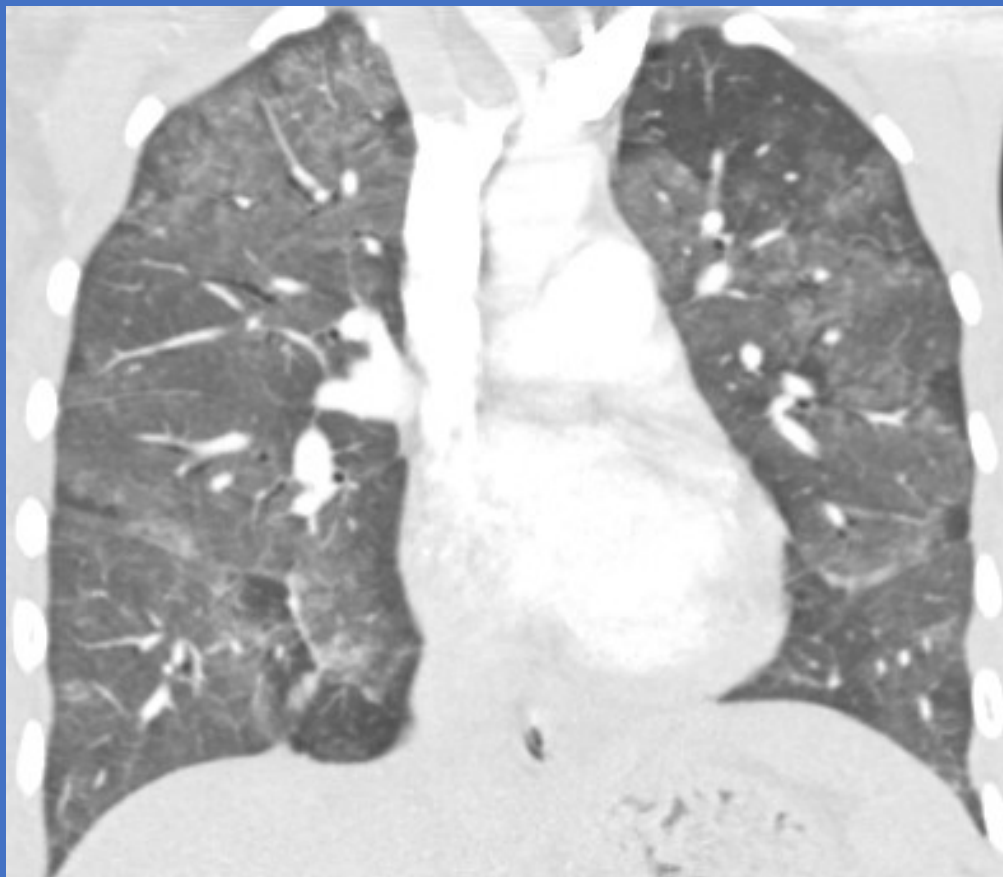


# Chest X-Ray 1 View AP

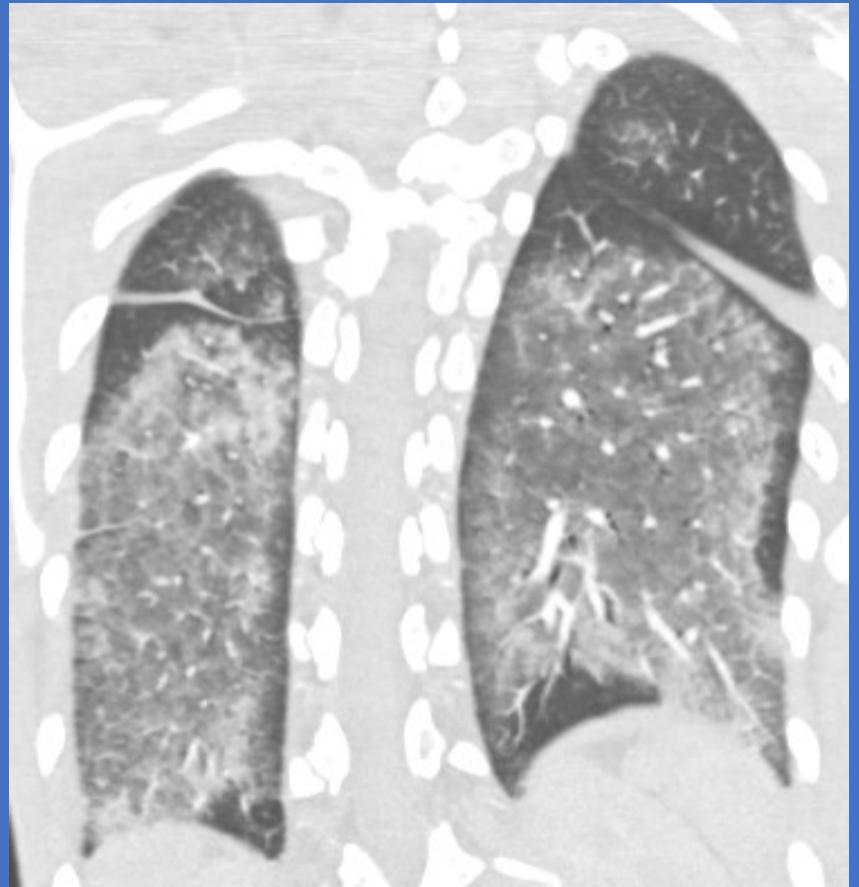
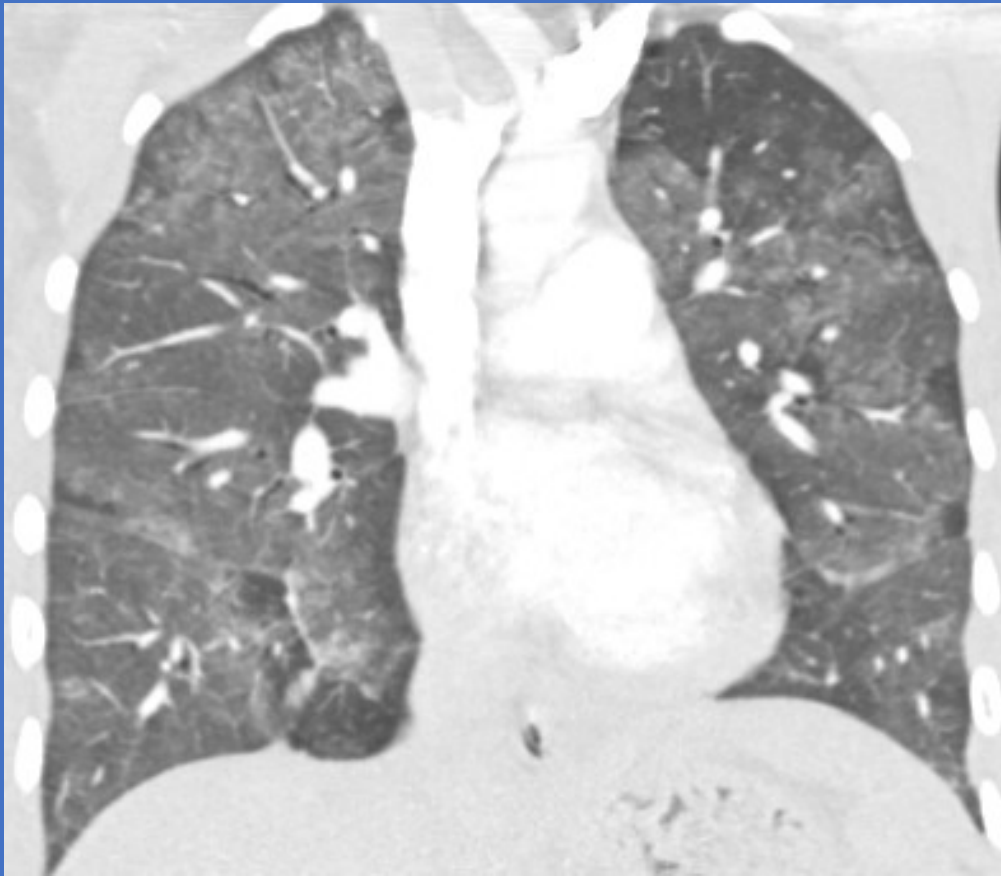


What do we see?

Which plane are these images in?

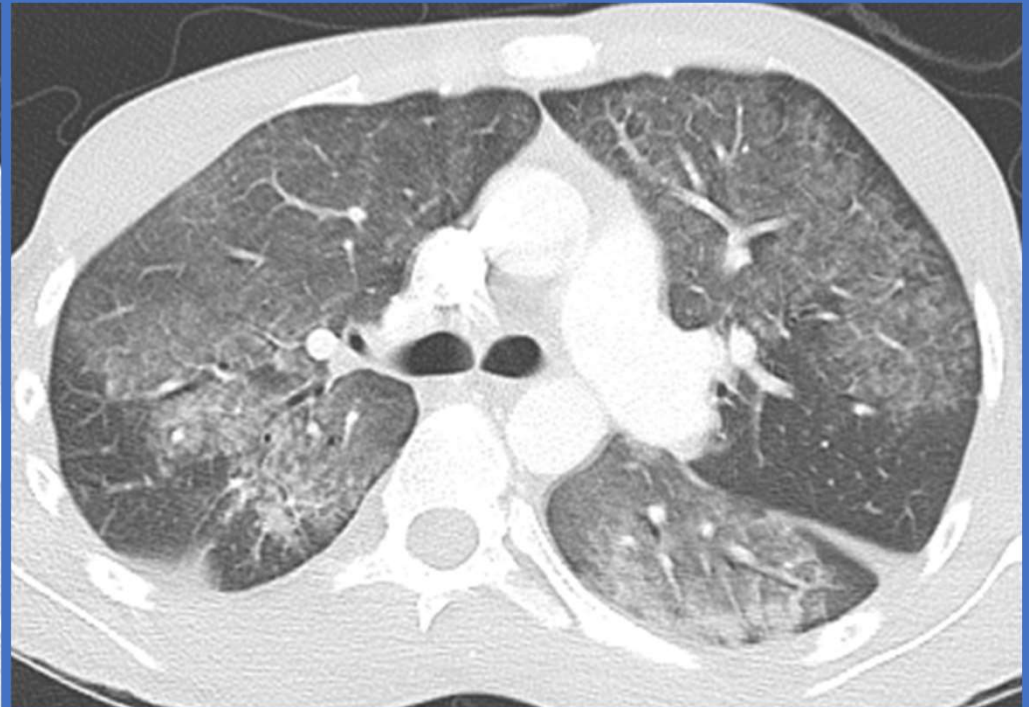


# CTPA – Coronal Images



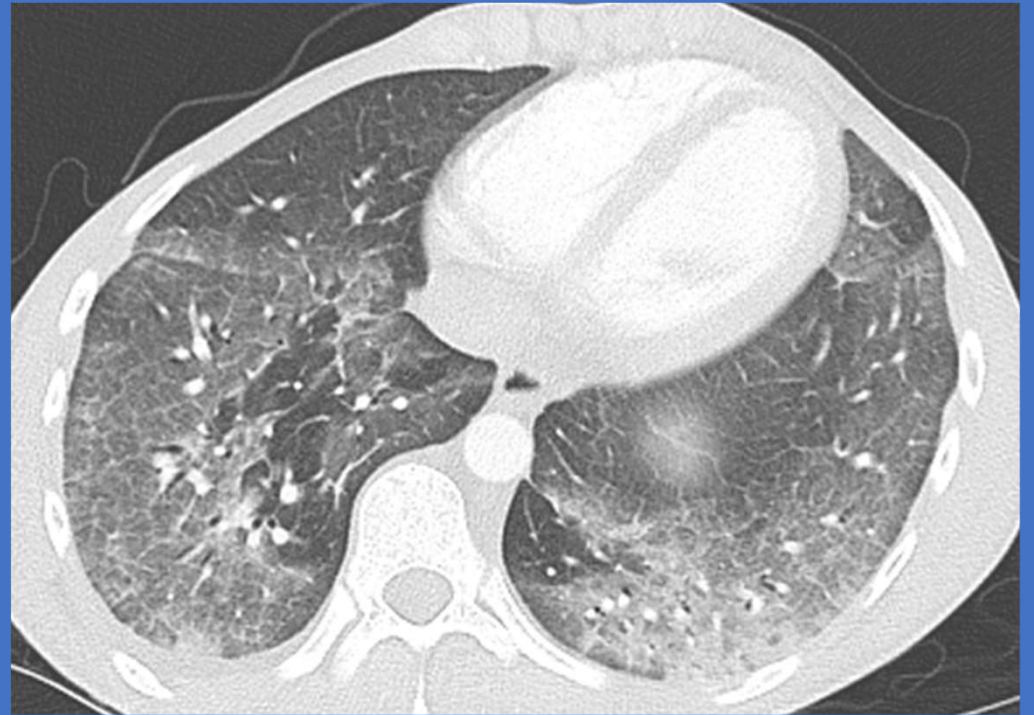
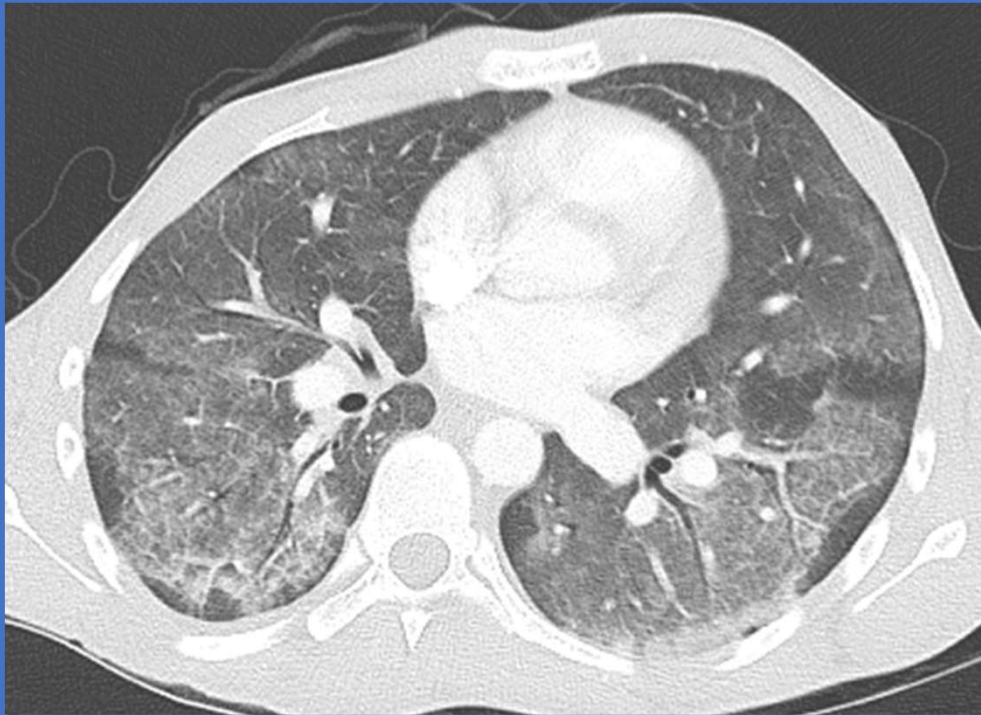


# CTPA – Axial Images





# CTPA – Axial Images



# Final Radiologic Findings

- The CXR has findings of:
  - Symmetric bilateral hazy alveolar and interstitial opacities diffusely throughout both lungs but concentrated in the middle and lower regions of bilateral lungs greater on the Right than the left. No significant pleural effusion. Cardiomeastinal silhouette is of normal size.
- The CTPA has findings of:
  - Bilateral symmetric diffuse central ground glass opacities with peripheral sparing. Leading edges of consolidation. Trace effusion.

# Differential Diagnosis

## Electronic Vaporizer Associated Lung Injury

- 1) Presents like other atypical pneumonias.
- 2) However, with a recent history of vaporizer use and negative work up despite imaging/clinical findings.

## Diffuse Alveolar Damage

- 1) Stereotypical response to lung injury with intra alveolar exudates.
- 2) These exudates can progress to an organizing pneumonia with catastrophic fibrosis.

## Cryptogenic Organizing Pneumonia

- 1) Form of Idiopathic Interstitial Lung Disease.
- 2) Often appears midlife and presents with flu like symptoms and results in fibrosis.

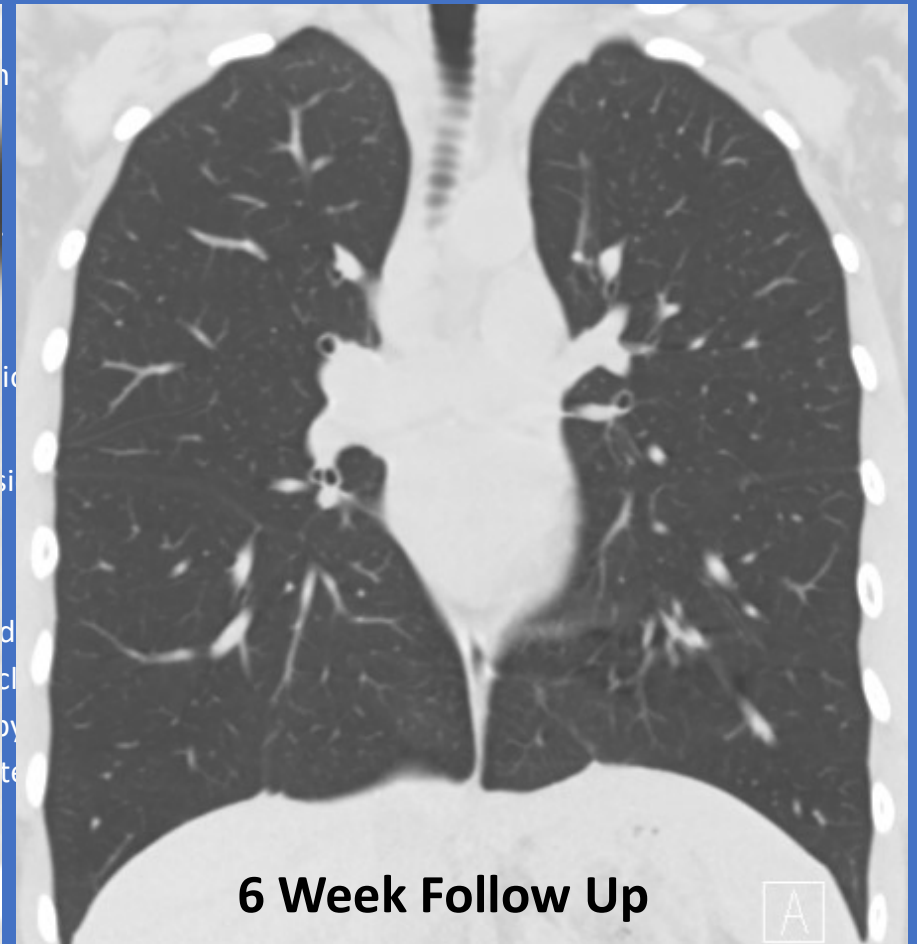
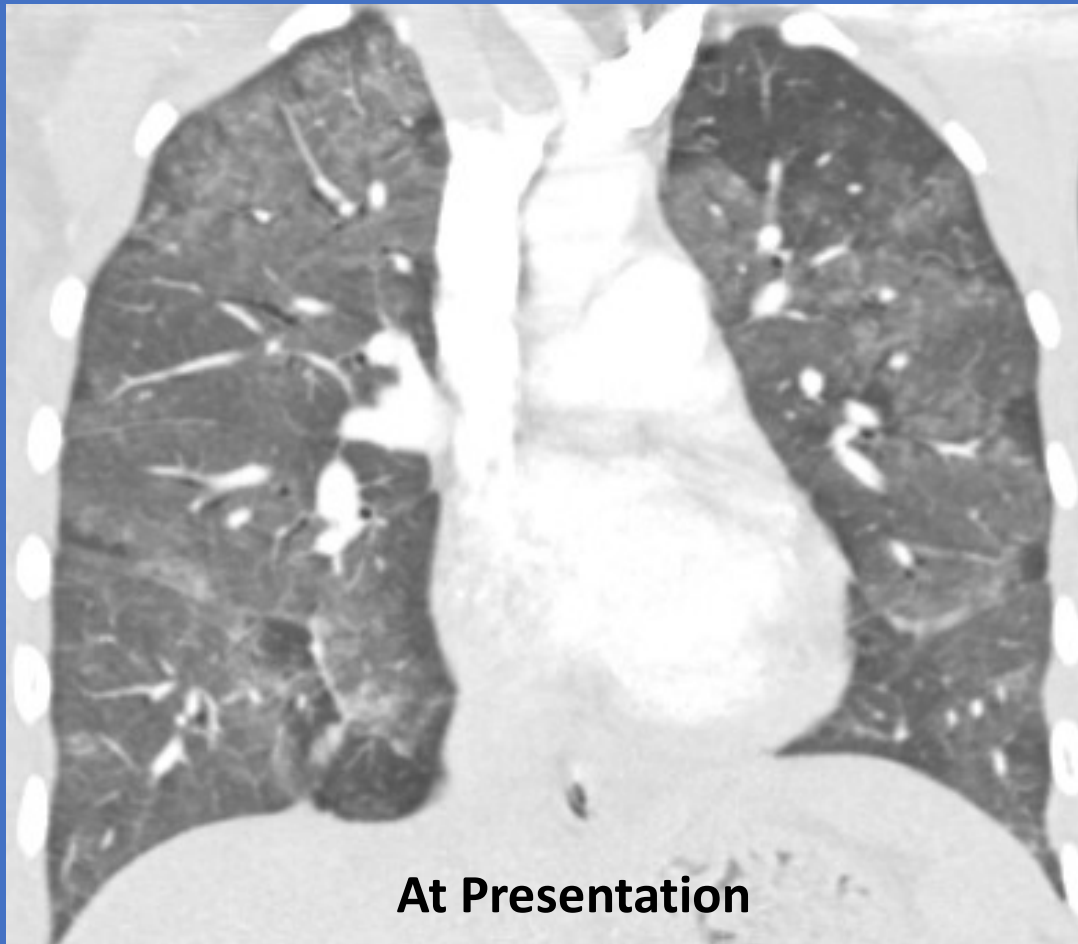
## Hypersensitivity Pneumonitis

- 1) Hypersensitivity pneumonitis can be either a T3 or T4 Hypersensitivity reaction.
- 2) Often associated with farmers or bird fanciers lungs.

## Lipoid Pneumonitis

- 1) Can be due to many etiologies like mineral oil or from fat embolisms.
- 2) Leads to a similar presentation as bacterial pneumonia.

# Putting it all together: Pleuritic Chest Pain



# EVALI (Electronic Vaporizer Associated Lung Injury)

- Definition: Lung injury associated with e-cigarette use within the past 90 days of symptom onset and infiltrates on chest X-ray or CT without alternative explanations.
- Epidemiology: As of 2020, 2578 patients in the USA have had EVALI with 68 deaths reported.<sup>1</sup>
- Pathophysiology: The pathophysiology of EVALI is still unknown.
- Pathology: Brochiolocentric acute fibrinous pneumonitis
- Treatment: Steroids after rule out of infectious causes and supportive measures.<sup>2</sup>
- Prognosis: 96% of patients with EVALI require hospitalization with a current mortality rate of 3%.<sup>1</sup> Recovery of pre-illness lung function is still up for debate as the data for this is just not conclusive.

# Other Important Information

- As Per CDC<sup>3</sup>
  - 82% of patients experiencing EVALI reported using THC containing e-cigarettes with 33% solely using THC containing e-cigarettes.
  - Most cases of reported EVALI are associated with THC and Vitamin E Acetate containing substances.
  - These cases showed that the source of these substances used in the vaporizers were usually from an informal source like family or friends.
  - **Current guidelines recommends that pregnant women, youths or young adults never use e-cigarettes.**

# References

- 1) Panse, Prasad M., et al. “Radiologic and Pathologic Correlation in EVALI.” *American Journal of Roentgenology*, vol. 215, no. 5, 2020, pp. 1057–1064., doi:10.2214/ajr.20.22836.
- 2) Hollingsworth, Hellen. *UpToDate*, [www.uptodate.com/contents/e-cigarette-or-vaping-product-use-associated-lung-injury-evali](http://www.uptodate.com/contents/e-cigarette-or-vaping-product-use-associated-lung-injury-evali).
- 3) “Most EVALI Patients Used THC-Containing Products as New Cases Continue To Decline.” *Centers for Disease Control and Prevention*, Centers for Disease Control and Prevention, 17 Jan. 2020, [www.cdc.gov/media/releases/2020/p0117-evali-cases-decline.html](http://www.cdc.gov/media/releases/2020/p0117-evali-cases-decline.html).